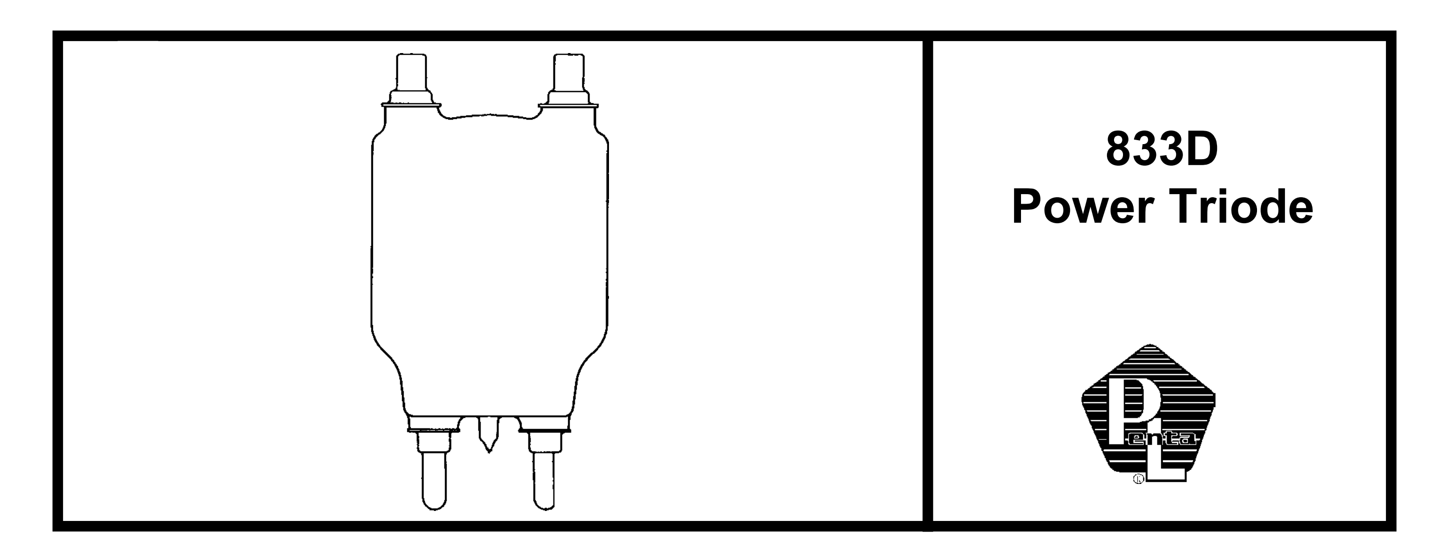


833D
Power Triode

The PL833D is a 3 electrode tube designed for use as a modulator, amplifier, and oscillator. The exclusive Penta Laboratories graphite-anode construction enables the PL833D to dissipate a full 600 watts, exceeding the industry standards by some 5 percent. At maximum ratings, the tube is cooled by forced air flow over the seals and envelope. The PL833D utilizes a special design, high output, thoriated tungsten filament.

Electrical Characteristics

Parameter	Value	Unit
Filament	Thoriated Tungsten	
Voltage	10	Volts
Current	11.5	Amperes
Amplification Factor (E_c=-20 V, I_b=2 mA)	35	
Interelectrode Capacitances		
Grid-Plate	6.3	pf
Grid-Filament	12.3	pf
Plate-Filament	8.4	pf

Mechanical Characteristics

Parameter	Value	Unit
Filament Terminals	J1-9 and J1-10	
Grid and Anode Terminals	J1-7	
Mounting Position	Vertical	
Maximum Envelope Temperature	145°	C
Maximum Overall Dimensions		
Length	8.8125	Inch
Diameter	4.594	Inch
Net Weight(approx.)	1.025	Pound
Required Air Flow to Envelope	40	C.F.M.

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P E N T A   L A B O R A T O R I E S

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Ratings and Typical Operating Conditions

AF Power Amplifier and Modulator, Class B

Maximum Ratings	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
Maximum Signal DC Plate Current	500	500	500	500	Milliamperes
Maximum Signal Plate Input	1125	1300	1600	1800	Watts
Plate Dissipation	300	350	400	450	Watts

Typical Operation (values are for two tubes)

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
DC Grid Voltage	-70	-80	-100	-100	Volts
Peak AF Grid Voltage	400	440	480	510	Volts
Zero Signal DC Plate Current	100	100	100	100	Milliamperes
Maximum Signal DC Plate Current	750	780	800	900	Milliamperes
Effective Plate to Plate Load Resistance	9500	10500	12000	11000	Ohms
Maximum Signal Driving Power(approx.)	20	30	29	38	Watts
Maximum Signal Power Output(approx.)	1650	1900	2400	2700	Watts

RF Power Amplifier, Class B

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
DC Plate Current	300	300	300	300	Milliamperes
Plate Input	450	525	600	675	Watts
Plate Dissipation	300	350	400	450	Watts

Typical Operation(Carrier Conditions, per tube, with a maximum modulation factor of 1.0)

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
DC Grid Voltage	-70	-100	-120	-120	Volts
Peak RF Grid Voltage	90	110	120	130	Volts
DC Plate Current	150	150	150	150	Milliamperes
DC Grid Current(approx.)	2	2	2	3	Milliamperes
Driving Power(approx.)	10	11	14	21	Watts
Power Output(approx.)	150	200	225	250	Watts

Plate Modulated RF Power Amplifier, Class C Telephony

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	2500	3000	3000	4000	Volts
DC Grid Voltage	-500	-500	-500	-500	Volts
DC Plate Current	400	400	450	450	Milliamperes
DC Grid Current	100	100	100	100	Milliamperes
Plate Input	835	1000	1250	1800	Watts
Plate Dissipation	200	250	270	350	Watts

Typicial Operation (Carrier conditions, per tube, with a maximum modulation factor of 1.0)

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	2500	3000	3000	4000	Volts
DC Grid Voltage	-300	-240	-300	-325	Volts
Peak RF Grid Voltage	460	410	490	520	Volts
DC Plate Current	335	335	415	450	Milliamperes
DC Grid Current(approx.)	75	70	85	90	Milliamperes
Driving Power(approx.)	30	26	37	42	Watts
Power Output(approx.)	635	800	1000	1500	Watts

RF Power Amplifier and Oscillator, Class C Telephony

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
DC Grid Voltage	-500	-500	-500	-500	Volts
DC Plate Current	500	500	500	500	Milliamperes
DC Grid Current	100	100	100	100	Milliamperes
Plate Input	1250	1500	1800	2000	Watts
Plate Dissipation	300	350	400	450	Watts

Typical Operation (Key-down conditions, per tube, without amplitude modulation)

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3000	4000	4000	Volts
DC Grid Voltage	-200	-160	-200	-225	Volts
Peak RF Grid Voltage	360	310	375	415	Votls
DC Plate Current	415	335	450	500	Milliamperes
DC Grid Current(approx.)	55	70	75	95	Milliamperes
Driving Power(approx.)	20	20	26	35	Watts
Power Output(approx.)	1000	800	1440	1600	Watts

Application Notes

Maximum ratings apply at frequencies up to 20 megacycles. The tube may be operated at higher frequencies provided that the maximum values of the plate voltage and plate inpute are reduced according to the table below. Special attention should be given to insuring that adequate ventiation is provided at these frequencies.

	Natural Cooling			Forced-Air Cooling			
Frequency	30	50	75	20	50	75	Megacycles
Percent of Maximum Rated Plate Voltage and Plate Input							
Class B	100	98	94	100	97	93	Percent
Class C, Plate Modulated	100	90	72	100	83	65	Percent
Class C, Unmodulated	100	90	72	100	83	65	Percent



833D Power Triode

Typical Characteristics

